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THE PHILOSOPHY OF VOICE:

SHOWING

THE RIGHT AND WRONG ACTION OF VOICE
IN SPEECH AND SONG.

TO WHICH IS ADDED

THE BASIS OF MUSICAL EXPRESSION.

BY CHARLES LUNN.

“Before you can possibly be safe in dealing with Nature, you must get two or three kinds of cross proofs, so as to make sure not only that your hypothesis fits that particular set of facts, but that it is not contradicted by some other set of facts which is just as clear and certain.” – *Huxley*.

THIRD EDITION.



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TO
THE MEMBERS OF THE MEDICAL PROFESSION,
A PROFESSION IN WHICH SELF-ABNEGATION AND SCIENTIFIC
RESEARCH HAVE EVER REIGNED SUPREME,

This Essay,

WITH EVERY FEELING OF ADMIRATION, IS RESPECTFULLY
DEDICATED.

PREFACE TO THE THIRD EDITION.

To slay dead men is wasted time. When I undertook the task of explaining the right and wrong action of the human voice and the causes of its errors, there was not one book upon this subject in any language that would bear the strain of being tested by known scientific laws. Now that in briefest time a third edition is required, it would be idle in me to pretend not to know that I have been accepted by the public as an authority upon these questions. Being so, much that was needed in the onset to substantiate my isolated thought becomes work of supererogation; the main teaching force has of course been retained, but some of the argumentative part has been withdrawn, as no longer needed, and in order to add a number of useful applications of acoustical laws which, obeyed, will be directly serviceable to the reader.

It has been asked, "Show us results?" Briefly,

if would-be singers choose to begin in the middle or at the top of their study instead of at the root of it, the fault is theirs if they fail, and I disdainfully reject the attempt to make me responsible for an absence of public vocalists.

CHARLES LUNN.

EDGBASTON, NEAR BIRMINGHAM,

October, 1875.

PREFACE TO THE SECOND EDITION.

THE first edition of this work, issued solely in the interests of science, was specially addressed to the profession into whose care voice-training should rightly and must ultimately fall ; but the unexpected sale—a sale far exceeding my most sanguine hopes, for the entire edition has become exhausted in the brief space of two months, and this before many leading journals have had time to review its merits—has emboldened me to put forth a second edition, couched in simplest terms, which, while conveying my meaning in full, shall appeal not only to the class for whom it was originally written, but, by the substitution of ordinary for technical expressions, shall also be of service, as best my powers will allow, to all who may choose to read my words. The many eulogistic remarks received from leading men of scientific repute furnish an additional reason for issuing an edition that shall appeal to all classes in a popular form ; and if it be true that this work

has "added a page to physiology," it becomes my imperative duty to seminate the discoveries in such manner that I may hasten public acceptance of their truth. I trust that, besides the present modifications, I have enhanced the value of the essay by the addition of observations on the rudiments of music, deduced from my researches in Mental Philosophy. This I have done in order to aid progress in the Art I follow, and that musicians may not be stigmatised as being obliged to invoke aid from outsiders. The very great advance made of late years in psychology must result in a far more intelligent mode of musical treatment than that which now prevails.

The Anatomy and the Physiology of the vocal organ are both exhausted subjects; but the Pathology of it—that is, the science which explains the causes and symptoms of living nature disturbed or disarranged—has singularly enough never before been written: and this neglect was owing to no one uniting in himself both practical art training and scientific research. How far my credentials are good in the latter respect I leave logicians to judge; how far in the former I may show by stating that the school founded by Porpora at Rome was further developed by Gabrielli (pupil of Porpora and the elder Garcia) and others acting in conjunction at Bologna. From the Bolognese School came Grisi and Alboni. My master, Signor Cataneo, was trained at Bologna, and afterwards migrated to Milan. From

his studio, amongst others, issued Angiolina Bosio, the meteor-like flash of whose too brief life is still unforgotten by those who were privileged to hear her.

I cannot conclude this preface without publicly acknowledging my thanks to my publishers for their courtesy, and for the many practical suggestions made, in order that nothing might be left undone to ensure the success of the work; and to reviewers for the uniform kindness in which this my effort to reduce vocal art to a true scientific basis has been met; and although my results are as yet confined to the less brilliant, but perhaps more useful spheres of the pulpit and the platform, I have little doubt but that when the system has been applied in the training of vocalists for public life, I shall be there also equally well represented.

CHARLES LUNN.

EDGBASTON, NEAR BIRMINGHAM.
March, 1875.

PREFACE TO THE FIRST EDITION.

THE following pages are a reprint of several papers published in the *Medical Press and Circular* with a view of explaining the differences which are found between the statements of musicians and physiologists, and are intended to place voice culture in its true position as a branch of surgical, rather than as a branch of musical art. The proposition of placing voice training into the hands of a different class of men to that which hitherto has held it with unchallenged authority may in the onset create dismay, and from the thoughtless members of the musical profession generate opposition; but the proposal is Entirely Beneficial, and is not, as at first sight may appear, detrimental to the profession it seems injuriously to affect. The only result of such change would be that true vocalists—those who desire not only to be singers, but also artistes, and who, therefore require instruction both complete and profound—would be temporarily withdrawn from musical

teachers only to return after a time and add renewed and enhanced lustre to the beautiful art of song. Indeed, until musicians themselves insist upon isolating the three branches forming the complex art called singing, excellence will always remain an exceptional thing, forcing itself in spite of, not in consequence of, past training. So far as the art of song is concerned, there should be in each large town three men acting in friendly consort—one whose sole work should be to attend to the substratum and teach the production of true musical sound by the voice, implicitly obedient to the will of the possessor; a second—a musician proper—who should teach, on stern scientific principles, laws of æsthetics, or the arranging of present pleasurable impressions associated relatively for a predetermined end; while the third and last should take these persons so developed and so taught and teach them the art of rightly associating words with accepted musical impressions, so that each appeal to the listener should be perfect of its kind, while neither appeal conflicts with the action of the other. This may appear Utopian: with that I have little to do; it has rested with me to see that at least my branch of art-work should no longer be o'erelouded with Error and her attendant Failure. So far as voice training is concerned, it has for years been calmly assumed that the majority of people are naturally created defective, and that a master can do what

Nature herself has failed in doing. Monstrous, incredible, and impious assertion! This, on the contrary, is the truth: All error and weakness, and all defect in tone, each and all of these are *induced*, and can therefore be *removed*. But, passing the after-application of voice training for the specific end of song, note how many, note how the majority, even, of public speakers, fail, not on account of intellectual, but entirely owing to physical incapacity; all this could be averted by establishing at each University a Professorship of Voice Production; thus, by rightly-directed work, could be imparted to our future clergy, statesmen, and lawyers a perfect power to display their thoughts through spoken words uttered with enduring force and masterful control of tone. This at some future time will doubtless be done.

In most treatises on the voice the writers have confusedly mixed up the science of physiology with the surgical process of voice restoration; they have adorned their works with numerous diagrams extracted from physiological works: as all such diagrams tend only to confuse, it has been my endeavour to avoid this fault, and to argue on purely abstract principles. And now, little work, go on your mission: that you will meet with opposition—as all advanced thought invariably does—is to be expected; but there are more persons interested in truth than ever there are in its destruction, so to

the bar of public opinion I appeal, confident in the ultimate acceptance of what I herein proclaim as true, and confident, too, that these truths are capable of conferring great—of conferring very great benefit, not only upon musical art, not only upon public orators, but, above all, upon the suffering and the enfeebled, whose debilitated health might be strengthened, and chest disease swept in great part from our shores.

CHARLES LUNN.

EDGBASTON, NEAR BIRMINGHAM,
December, 1874.

THE PHILOSOPHY OF VOICE.

THE present age is essentially one of revision and research ; no longer are the accepted notions of bygone times taken as granted, but sufficient proof is required that what has been advanced on any given thing has borne the scrutiny of science, and has been weighed in the cold scale of logic. Of late years a part of the artistic world has been trying to teach the members of the medical profession, and through them others, the science underlying the art of voice production ; so naturally is challenged the attention of all lovers of truth in Nature and rightness in human work. If the statements made by musicians be true, one of three things is sure : 1. Either the accepted laws of natural philosophy are unreliable ; or, 2. All the observations made during dissection have been made by careless observers, and all the experimenters upon the detached larynx have been ignorant men ; or, 3. Failing these, the theories held by those who profess to teach us are false. Then, in the face of the grave implications con-

veyed by the erroneous statements made by musical men, it is right that we should reconsider the whole question of human vocal tone from its commencement, so that discrepancies may be accounted for, erroneous notions combated, and learned ideas obtained in place of the vulgar ideas which at present prevail. As we cannot admit error in accepted laws of science, the real point at issue rests between the medical and musical professions; one or the other is wrong. It shall be shown that the latter is—that the fallacies held by singing-masters arise from their reasoning being deductive, never inductive, and that the influence of their art tends to destroy accuracy of statement. First, then, the difference between the two professions. Medical men are essentially scientific, their very profession is based on science, and that science is a never-ending one, inasmuch as it is founded on evil influence opposing human perfection; men of art, on the other hand, require range, not depth; their power lies in conception and imagination, while the former, in common with all scientific men, have their power in perception and penetration. Men of art evoke what is not; men of science see what is. Art-product results from seeing many things together superficially, but science teaches men to see one thing profoundly and well. Then, when men of art step into the alien field of science, the theories advanced are always suspicious, always liable to be overshadowed by the changing clouds of artistic feeling.

It is time all discrepancies between the conclusions of one class of men and those of another were swept away, so it shall be shown that second causes have been con-

fused with first, inducing illogical conclusions untenable by men of science. Moreover, the importance that all error should at once be crushed will become more apparent when we consider the constant demand for larger edifices and the paucity of orators and public speakers capable of filling by voice such buildings as at present exist. Voice training has become an inferior adjunct to music. Thus the delegates of the Clarendon Press, as final strength of tuition, have issued for the guidance of England's embryo preachers a work by a musician, which asserts "there is no necessity for seeking any power of altering the quality of the notes in the larynx itself."

Our teachers have to be tested on two points:—
1. Explanations of natural phenomena; 2. The method of procedure for the attainment of a desired result.

The following is extracted from Signor Garcia's work.

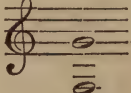
"Let us here observe that three registers of voice are generally admitted—chest, falsetto, and head. The first begins lower in a man's voice than in a woman's; *the second extends equally in both voices*; the third reaches higher in the female voice."

And this from the *Lancet* :—

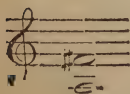
"In speaking of the compass of voices, the lecturer remarked that by many it is erroneously imagined that the female voice is simply a reproduction of the male voice on higher scale. The fact is, that the two overlap [converge] the break between the chest and falsetto registers, occurring exactly at the same pitch, *i.e.*, on, or just above F in the first space of the treble staff."

Let this be well understood: it is asserted that the male chest register necessarily has a greater number of

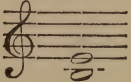
notes in it than the female, for while this latter can never go as deep as the former, the former can extend as high as the latter ; in other words, representing notes numerically, say from one to thirty, one being the lowest, a male chest register may embrace from one to sixteen inclusive ; a female can only embrace from nine to sixteen : thus, this part of the female voice must be eight notes less in compass than the male, and *may* be more : that is the theory held by all musicians. Taking the elaboration of this abstract theorem we find in Signor Garcia's "Singing Tutor" as follows : He gives to the contralto—the lowest female voice—a compass of from low

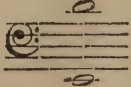
F to the G on second line of violin staff 

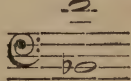
to the medium—mezzo-soprano—from low A to F sharp

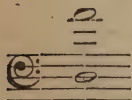


and to the highest female voice—soprano—

from B to E  To male voices, bass from

lowest E to upper D  baritone from B

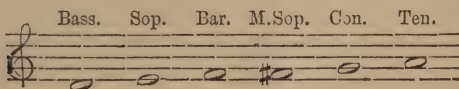
flat to upper F  and tenor from D to top



Granting Signor Garcia's statement,

"this register of the chest is the essential base of all

voices ;” we will place the compass given by him to each, arranged according to the highest limit given : We have bass to D, soprano to E, baritone to F, mezzo-soprano to F sharp, contralto to G, and tenor to A.



It is seen the bass ascends to D, baritone to F, tenor to A—a natural difference enough, as these voices are rightly considered a third apart in pitch ; but for the female we have E for the highest voice, F sharp for the medium, and G for the lowest, so that according to this arrangement the chest register extends in altitude *transversely* to the recognised pitch of each voice. But this is not all ; it will be seen that the highest note in pitch of all the notes given is ascribed to the tenor, while the soprano—the corresponding voice in the female to the tenor in the male—has but one note above the lowest male voice. Again, the extraordinary compass of “chest” voice with which all male voices are accredited, compared with the compass given to the female, must strike the most thoughtless observer.

Madame Seiler, the leading German authority, simply abstracts Garcia’s error, giving a division in the high part of the male voice as corresponding with a like division in the low part of the female ; but, expecting her statements to ultimately conflict with those of the medical profession, she foils the evidence of dissection thus :—
“ But in order to render practicable the proper stretching of the exsected larynx, muscles and membranes have

to be cut, which *sufficiently proves* that the functions of the organ of singing in the living must be *differently* carried on." Extend this statement and anatomy becomes valueless. In point of fact, nothing of the kind is thereby proved, but the exact opposite is suggested—namely, that the functions of the organ of singing are presumably similarly carried on, but better, more perfect, and more extended results would ensue from the living subject than are producible from the dead.

Let us turn to the logical side of the question. Things which are equal to the same are equal to one another. Anatomy teaches us that there is no difference between the male and female larynx* save in size, so that actions are the same and results the same, only differing in pitch, the female voice being a reproduction of the male on a higher scale; and this has been amply proved by experiments made with the parts detached. Dr. Wyllie, in his valuable researches, produced what may be called the station note, that is, the note of sole approximation of vocal cords, without tension or relaxation. By slackening tension, each larynx, male and female, could produce sounds eight notes below the station note; by increased tension and increased blast, ten pure notes above the station note were produced, that is, upwards of two octaves of full vibrations, the female extending by the same mode of production one octave above the male. If then in death such results can be obtained, greater, not lesser results, would of necessity ensue from similar things in life. For the sake of convenience we may accept our

* The larynx is the name of the box in which the vocal cords are placed: it is felt to rise when we swallow.

teacher's definitions, and call that "chest," or "thick" register, which is produced by full vibrations; "falsetto," or "thin" register, that which is produced by solely vibrations on the rim; and "head," or "small" register, that which results from a "node;" and we may accept Signor Garcia's definition of a register as being "a series of consecutive and homogeneous sounds, rising from the grave to the acute, produced by the development of the same mechanical principle, the nature of which essentially differs from any other series of sounds equally consecutive and homogeneous produced by another mechanical principle." It is an aphorism in natural physics that there is no effect without a cause, and if, as alleged, the female voice be not a reproduction of the male, there must exist a difference of construction besides that of size, which difference all anatomists in all time have on dissection failed to perceive. The *onus probandi* rests with our would-be teachers; they assert a difference, we demand proof that such exists. But more, identity in production is denied by writers on voice, yet universal laws are deducted from one sex as affecting both. "We will study in the voice of the tenor the ascending progression of the chest register, and in the soprano, that of the falsetto and head registers" (Garcia). Then either it is wrong to deny coincidence of production, or it is wrong to generalise the sexes; this dilemma sufficiently shows that the inroads to science have not been deep, and that the dogmas advanced are either fallacious or premature.

Again, we are asked to believe that the "falsetto," or those sounds which result from a vibratory rim, are iden-

tical in altitude and similar in limitation, while the instruments producing these sounds differ materially in size. Finally, we are asked to believe that the power of forming a "node" (head register) is *denied* to most men, owing to an *absence* of the cuneiform cartilages. We ask the cause of these discrepancies: it is futile to account for the errors by saying, "it is seen as explained," because we call attention to the fact, that of a number of notes of equal pitch and apparently similar productions, one alone may be accurate and possess true musical sound by the voice, and that such note can scarcely be diagnosed by the laryngoscope. "Garcia says himself that one-third of the glottis was always hidden from him by the epiglottis, and to this circumstance is the unsatisfactory character of his observations to be ascribed. But even when, after long practice, one is able at last to bring the whole glottis into view, this is not by any means enough. Not until observation has been so long continued that all the movements of the vocal organ are normal, notwithstanding the *unnatural* drawing back of the epiglottis, and not until the process that goes on is found again and again to be always the same, can it be recognised as fact." (Seiler.)

To this we object; the experimenter could not possibly know, under such contortions, that the vocal organs were acting in their "normal" state, and in order to render practicable the desired observance of the instrument during the emission of sound, muscles and membranes had, by "long practice," to be distorted, which sufficiently proves that the functions of the organ of singing, when accurately emitting tone, are *differently* carried on.

To observe an ugly, unmusical tone, that being falsely produced, is readily "found to be too fatiguing," and therefrom deducing fixed laws is about as sensible as taking a cripple to represent the human race, and deducing physical laws from his distorted state.

As in death so in life; there are two octaves of full vibrations natural to all voices. These two octaves, if in the male, are usually classed under one term—"chest;" while in the female they are always classed under two, and sometimes under three terms. This confusion has arisen owing to persons mistaking re-enforcement for generation; a violin string is a generating cause, the wood-work strengthening the created sound.

Then there is the "falsetto," which does not extend equally in pitch in both voices, but extends collaterally, with the greater part of the full vibration: this is, as its name implies, a false production; it is created by the air in passing causing the edges only of the vocal cord to vibrate, on account of the cords being insufficiently approximated. In point of fact, this production is a partial catching of the air in transit, and has not what may be termed the "tonicity," or balance of voice; consequently it is not capable of any great variableness in loudness. Then there is the harmonic, or "node," which weakly people and persons of small chest power substitute for about the last five notes of the full vibration. This results from skill, and not from the possession of a superfluous cartilage; but it may be observed, excellence in one method of production usually involves defeat in the other, so that vocalists select one or the other mode of production and retain their special way. The singular

thing, however, is this, that while the high A of Mr. Reeves, the high G of Mr. Santley, interpolated in "Oh, ruddier than the Cherry," and the high B flat of Mdlle. Titiens in "La Dove Prende" are all identical in method of production, they are called respectively male "chest" and female "head," while the full vibrations of Mdlle. Titiens and the harmonics of Madame Sherrington differ in production, but are classified by masters under one term.

Such errors of statement arise from a confusion between first and second causes. This is readily shown. Any difference which is observed to exist between the results obtained from the larynx attached and when detached must be owing to the different conditions under which observations are made; as we cannot accept a difference in the generating cause of voice, any apparent antagonism between hue tinging created sound in man, as contrasted with that of woman, must be traced to auxiliary influences, for there is very little difference between the sound of the male and the female larynx when detached, farther than the fact that the voice of the former is set several notes lower than that of the latter. The absence of the peculiar characteristics in both cases is owing to the isolation of the instrument from the other parts of the body. We know air imprisoned will strengthen sound created elsewhere; thus a difference in the form of chest necessarily throws an influencing power on the tone derived from the intrinsic nature of the vocal cords. For obstetric reasons the breathing of woman is pectoral, while that of man is abdominal; owing to this deeper breathing on the part of man, the whole scale of man's

tones, when under full vibration, is tinged by this under re-enforcement, but this under-tone soon ceases in woman—it ceases when the larynx, by its ascent, has caused the plane of the vocal cords to assume a position so diagonal that the full force of tone is thrown forward into the arch of the mouth. The deeper breathing in man accounts for the first fallacy of singing-masters, and sweeps away the apparent discrepancy between the results attained by experimenters and the exemplifications presented by our songsters, and also accounts for the extraordinary assertions made by our teachers respecting the male as contrasted with the female “chest.” Consequently it may safely be asserted that the vocal cords are subject to the same natural laws as all sounding bodies, and as the sole difference between the male and female larynx is one of size alone, the voice from the latter is a reproduction of the former on a higher scale.

Madame Seiler attempts to support the fallacy held by voice-trainers thus: “As the male larynx is about a third larger than the female, it is plain that the registers in the male voice have a greater expansion.” This is false, the expansion would be exactly similar; the writer evidently deduced a conclusion from excess in length, irrespective of additional breadth and thickness. The difference between the male and female larynx is uniform; thus *greater* change of state would be required of the larger larynx to produce a *similar* result to that obtained from the less. Of course, a slight modification of expansion might arise from some little difference in the intensity of attractive force, but this would be an individual, not a sexual difference, and might exist in

cords of similar length, and one would be likely to attribute greater elasticity to members of the more delicately organised sex; this, however, is inadmissible in laying down abstract principles.

For us to obtain a true theory of vocal emission the conclusions arising from different aspects of observance must be made to agree. First, as a scientific basis, we have the observations of the anatomist, who has pointed out, irrespective of results, what the instrument is. Secondly, we have what he has gained from the instrument acting by itself, as he imagines, in accordance with natural laws. Thirdly, we have a number of theories, more or less tenable, deduced from the complex results obtained from the instrument acting in connection with other influencing causes. Of these theories some have been deduced from the instrument acting in strict accordance to Nature, others, as in the case of all laryngoscopic observation, from the instrument more or less distorted.

It is singular that in all experiments, both on living and on dead, the most important point seems to have been overlooked, and that is that there is beautiful as well as ugly vocal tone, that beautiful sound is the natural result of true adjustment of an instrument over which the orator or singer has absolute control, while ugly sound is but a crippled result of solely a partial control. There have never been any attempts to accurately define wherein the difference lies between a true and false use of the human instrument of sound, nor has anyone tried to show the induction of error, and trace its corrective study.

A voice-trainer has to reinstate a control incidental to Nature, which control has become weakened by the association of articulative speech with vocal utterance, causing (1) a horizontal, and (2) a perpendicular weakness—purely a physical disadjustment, in effect causing the sound to be feeble, dead, and only partially responsive to the will. To obtain a clear insight to the subject we must trace these two points to their source.

Sound is air in motion obstructed, or air stationary put into motion by an elastic substance. Noise is either a single disturbance of air or conflicting disturbances; pleasurable sound is the result of successive and equiformed disturbances; so that a noise arising from a single disturbance may only want *continuity* to transform it from offensive into agreeable sound. Where sound results from air resisted forcing itself through a fissure, that sound cannot be musical unless the fissure be symmetrical, that is, unless it be divisible by two straight lines at right angles into four equal parts. Without going into the acoustical part of the question, it may be stated musical sound is compounded of clearness, smoothness, volume, and intensity. In air passing through a fixed fissure, clearness results from the smallness of the fissure, smoothness from its form, intensity from the force of blast resisted, and volume from air imprisoned in a cavern, to which the fissure is the entrance or exit. In a vibratory material, the clearness, the basis of the quality, results from the intrinsic nature of the thing; the smoothness from unimpeded swing; the loudness is owing to the width or amplitude of swing; and the volume results from re-enforcement from

attached parts. A vibratory tuning-fork placed on a table has its sound so strengthened thereby that a child, judging by sense of hearing alone, would ascribe the sound to the table, just as a child would suppose a rainbow to be an arch of colour supported by its ends resting on the ground ; vibratory matter placed above air imprisoned in the chest has its sound so strengthened that many ascribe the sound to the chest itself—hence the term “chest” register. Thus much for generalities ; now for particulars.

As Mr. Mill pointed out, all that we do is dependent upon resistance ; there is a resistance acquired, and there is a resistance incidental to our being ; there is a resistance permanent and another temporal. In all our relationships with the world without, our control is an acquired knowledge of forces acting in opposition ; this knowledge results from numerous past experiences, and has grown with our growth. In our own construction there are forces placed in opposition, so that, when in a state of repose, muscles are not inert and flaccid, but balance each other ; this condition is what we term “tonicity.”* With the organ of voice there is an exactly similar condition, which may be termed “the tonicity of voice,” and it is the purpose of this work to explain this balance and its disturbance by spoken words. This condition is voluntary ; under it the wind and reed equally act, and the pressure and resistance become

* Probably this fact is comparatively unknown to outsiders. If an arm be dislocated, the muscles which pull inwards are released from the opposing tension, and considerable and somewhat rude force is required to draw out the arm sufficiently to replace it in its socket.

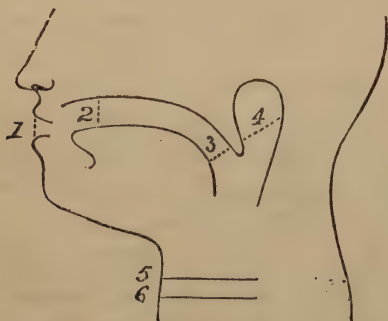
equipoised, save a small yielding surface presented by the vocal cords. We have, then, to consider our two forces—air in motion (breath) and the elastic obstruction. The following plan of our breath-power will settle one part of the business :—

Immovable.		Residual Air.	120 Cubic Inches	Immovable.	
Intraction.	Involuntary	Supplementary Air	130 Cubic inches	Voluntary	Propulsion.
		Ordinary Inspi- ration	26 Cubic inches	Involuntary	
	Voluntary	Complimentary Air	100 Cubic inches		

The *residual* air is that which we never can get rid of; then there is the *supplementary* air, which in ordinary breathing we do not expel, but which we can squeeze out if we will to do so; after these there is the small quantity of air added to the two former quantities, which both in its exit and entrance is independent of the will; lastly, we have what by willing we can add and forcibly draw in over and above the preceding. On the one side, what is drawn in by Nature can be expelled by Will; on the other, what is expelled by Will will be drawn in by Nature.

As there is no occasion for a public speaker or singer to do the work himself, when the involuntary contractile muscular force will do it for him, it may be laid down as a Universal Law that Complete Inflation is the first condition for true use of the organ of sound.

Next, for resistance—that is, the principle by which a fluid may be imprisoned; this necessitates a short investigation of speech. It will be seen that Nature's law is one, and a most simple one; and that however complicated language may appear, it is reducible to a few fundamental principles.



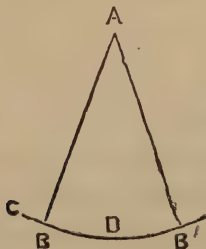
The first place where air can be resisted is at 1. This resistance results from a partial action of the muscles of the mouth. By ceasing to will to hold, an explosion of the condensed takes place, in result the letter *p*. By holding with the tongue at 2, the air is imprisoned and condensed behind; ceasing to will to hold an explosion takes place called *t*. In ordinary expiration, the breath escapes either through the greater passage terminating at the mouth, the column of air in motion striking on the soft palate and elevating it, or it escapes through at 4, and thus acts by the nose. By holding breath at 3 and 4 both passages are blocked, the uvula acting directly in this, occupying the indentation at the base of the tongue, and thereby aiding the resist-

ance; by ceasing to will to hold an explosion takes place called *k*. These consonants, *p*, *t*, and *k*, may be termed simple complete obstructives—one a labial, one an arco-palatal, and one a faucial obstructive. The principle in each is one, an act of the will acting in different localities, and causing, owing to the nature of the obstructing force, one explosion of condensed air; in effect, noise. The difference in result is not owing to difference of principle, but difference of locality in the application of the principle. By going lower down still to 5 and 6 we come to vocal utterance as contrasted with whispered articulation—that is, we find the same power of obstruction, but which, if rightly released, causes a continuous vibration; in effect, true musical sound. The action of this part we have to settle. (Here let the reader read in whispered words part of a sentence, then gradually, while reading, transfer the manner to words uttered out loud, then fall back again slowly to whispered words: he will not need further teaching where voice comes from.)

It is better, if possible, to illustrate by abstraction,* as physiological sketches are to the living subject useless for teaching purposes, and indeed are confusing rather

* As a drug will produce effect without the patient being made acquainted with its chemical properties, and as it will do so without the patient being made aware whether it affects him through the nervous system or by absorption through the blood, so a clearly defined mode of practice will produce effect without the vocalist being made acquainted with the physiological processes underlying it, and, so far as the trainer is concerned, a system can only exist when the master has passed beyond the region of "experiment" and entered that of certainty. Therefore "abstraction" is the best way of instructing.

than aidful; so here is given an abstraction of the horizontal force supplied at the lips of the organ of voice.



Let AB , AB' , be two straight lines revolving on the axis A , and describing the segment of the circle C . Let the enclosed triangle represent the space through which the air in breathing passes. If we suppose an equally diffused force propelling a fluid through a fissure, the fluid would escape the most rapidly where the two straight lines are at their greatest separation; this escape would be unequal along the whole length of the fissure, increasing in proportion to the increased size. This inequality of escape would be less or greater, according as B B' are attracted to the point D or repelled from it. Now, it is clear that a fissure having two sides greater than a third cannot be divided into the required four equal parts unless a point be made at D corresponding to the fixed point at A . If this be done, the point being equal, the lines AB , AB' , would assume a parallel position. Supposing these lines to represent the boundaries of an elastic substance, they would, under

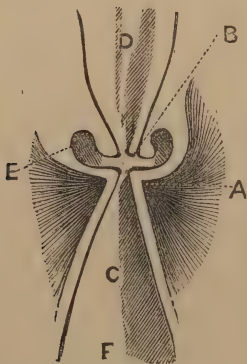
aërial pressure, alternate between parallel lines and ovals, thereby making the escape of the fluid through the fissure relative and equal, *i.e.*, beautiful as a sensation called sound. Dr. Marcet thus clearly expresses the action : " When air is blown into the windpipe, it must force its way through the vocal cords, and by so doing cause them to bulge outwards ; but the air, now finding a freer exit, and the pressure being relieved, the cords, from their elasticity, will immediately resume their former position. At the same instant the blast, meeting afresh with resistance, will again move the parts aside, and by that repeated action the current of air will be divided into a number of (equal) sections, reaching the ear in a succession of waves, and thereby producing a vibration, perceived as a sound."* Such are the conditions for true musical sound by the voice ; but there are two forces at work for evil to prevent right action—one derived from the association which has grown up between the nerve currents ruling the different positions of obstruction ; the other, owing to the use of vocal utterance as a secondary thing upon which articulation has been superposed, and the question is—How to get, in the living subject, this point at D ?

Having considered the action horizontally, we next consider it perpendicularly. The following section of the parts, cut through the centre from top to bottom, will show the relationship of the perpendicular to the horizontal force.

The science of physiology is indebted to Dr. Wyllie for a true solution of the phenomena which take place

* "Clinical Notes on Diseases of the Larynx."

in the organ of voice. Before his observations were made upon the detached larynx there was no accepted theory respecting the use of false cords, nor of those two chambers the ventricles of Morgagni, yet both ventricles and false cords exercise most important functions in the creation of true sound. Dr. Wyllie, by closer observation has not only corrected Czermak where he has been obscure or false, but what is of greater importance to all public speakers and singers, has also discovered the



- A.—True vocal cord.
- B.—False cord.
- C.—Angular approach from the chest.
- D.—Outlet upward.
- E.—Ventricle of Morgagni.

ruling cause of accurate as contrasted with false vocal emission; his observations and experiments are not only satisfactory to the student of physiology, but are of great practical use to all users of the human voice, for where Czermak has erred, there Garcia has naturally strayed also.

The space above the false cords and the space leading from the windpipe to the true cords are wedge-shaped, each inverted to the other (C D, page 34). When the cords are approximated their upper surfaces present a broad flattened plane falling away obliquely downwards and outwards, thereby leaving an angle of considerable size, which forms the margin of each vocal ligament. The same obliquity is observed above the false cords, while their lower margins are defined by the ventricles, well-marked pouches which extend upwards behind them about half-an-inch. Now it is to be borne in mind that by closure of the glottis complete stoppage is effected, not only of inspiration, but also of expiration, the most powerful efforts at either being rendered quite ineffectual. This is in a sense due to the action of those intrinsic muscles of the larynx which close the cords, but the strength of these comparatively minute structures is in itself inadequate to resist the enormous power which the air can exert upon the glottis from within.* (Simplified from Wyllie.) In experiments analogous to expiration, all attempts to stop the current of air by bringing the true cords into contact are futile. Owing to the form of approach, the air wedges itself between the vocal cords and produces in its escape "a sound

* Dr. Hutchinson gives as the result of experiments upon the dead subject 580 lbs. as the total pressure over the surface of the chest, reckoning an area of 206 cubic inches, and adds, that as during life much more air could be used, "there can be little doubt (judging from the rapid rate in which the elastic force increases when the distension is approaching its limit) that the muscular power to overcome this, towards the close of a very deep inspiration could not have been less than 1,000 lbs.

which more or less resembles the voice." In inverting the current of air perfect opposition is obtained by solely approximating the true cords ; the air catching on their flat edges makes them act just as the valve on a pair of bellows acts, the greater the force downwards the tighter is held the obstruction. On bringing together the false cords the closure is found to be complete ; the simple approach of their free edges proves sufficient to obstruct entirely the full force of air from below. This arises from the air in the ventricles creating an influence upwards and forwards. The conclusion to be derived is obvious : there is within the larynx a double valve, capable of controlling both the exit and entrance of air, so that we see the plan found so commonly throughout the body in such strictures, as in the course of the veins, holds also good in this.

Thus much for the physiological aspect of the case ; now for the physical. When the parts are at rest these chambers or ventricles are kept in equilibrium (1) by means of the pressure of the air in them ; (2) by the pressure of external muscles, &c. To close up the orifice a change is made in the pressures. This at first diminishes the size of the chambers, and therefore condenses the air in them ; the pressure of this air is consequently increased, and equilibrium no longer subsists ; the increased pressure of air expands the chambers, and there being no resistance at the orifice, the sides of the chambers move, and the result is, that the orifice is closed ; an additional force, of course, here makes its appearance, being a pressure on the chamber at this orifice, but this is counterbalanced by the continuous automatic

force from below. This is proved by observations on the living subject when producing accurate musical sounds. On placing the finger on the point of the Adam's apple, holding breath, and compressing the air by putting the expiratory muscles into increased activity, the larynx is felt to rise; this results from the air acting in the chambers (E, p. 34) and on the wedged approach to them, and together thereby forcibly carrying up the larynx. The greater the pressure the more the chambers become inflated, and the greater the inflation the tighter the closure, and consequently the higher the larynx. By feeling sideways with the finger and thumb above the thyroid, and compressing air, the expansion of the ventricles will be most apparent. A successive use of this expansion during singing accounts for the great breadth of throat which all true tonalists attain; for, by a proper use of the organ of voice, the two flat plates of the thyroid become forced out, and a much less acute angle of approach to the front is obtained. This, however, is anticipating.

Having seen the action of the instrument, we have to see its connection with attainable results—results, be it observed, both musically good and bad. (These are partly voluntary, partly mechanical. At the first cry of life the whole principle of true musical sound by the voice is displayed; there is clearness, volume (allowing for the size of the infant), and intensity, and only continuity, therefore, is wanting to transform such cry into musical sound. It is admitted that life cannot ensue without this cry, or an approximation to it, so we will trace its origin.) This cry is essentially mechanical, and is brought about by

reflex action of the spinal cord;* so it may safely be proclaimed that while people may be born cripples in other parts they cannot in the parts producing music, for cry they must or never live: hence it follows that all false use, all bad sound, is induced, and can, therefore, be removed, unless the parts become diseased in after years. On the one hand, while reflex action causes the first inhalation of independent life, on the other, owing to the difference in temperature between the circulation of the blood and the temperature of the air introduced, additional reflex force is generated, and a complete closure of the false and true cords results, that is the mechanical process which goes on before the dawn of consciousness. This resistance against the rebound of the respiratory muscles drives the inhaled air into the most remote ramifications of the lungs, and thus furnishes the residual air which, as we know, is immovable, and remains even after death, and could not get there save by such action as the above. If the opposing power were not perfect, we should have no safe guide to prove the existence of an independent life.

Here, then, we find in the release of this obstruction—brought about automatically by sole approximation—the same application of the before-mentioned principle, air condensed and released, this being the basis of all language. The sound produced by the infant cry would answer to Dr. Wyllie's station note, but, owing to smallness of size, it would be, in the infant, considerably higher in pitch than the station note obtainable from

* The reflex action is a rebound of the nervous system, independent of the will.

the adult. Then we add another simple explosive at 5 and 6 (p. 30), which explosive, instead of being confined to one impulsive disturbance of the air, has, owing to the nature of the parts which generate it, a power of being sustained, and this sound, resulting from an equal admixture of wind and reed, is the open vowel *a*. The vowel sounds of speech are five :—

Italian—*i, e, a, o, u*.

The corresponding sound in English would be *e* ; and for the second, *eh*, or the first part of the diphthongal sound given to our first vowel *a* ; for the third, the broad *a*, as in *father* ; for the fourth, the first part of our diphthongal *o* ; and for the fifth *oo*, or the latter part of our *u*.

Professor Max Müller attributes the difference in vowels to the different form of the cavity above the organ of voice, and this, so far as whispered articulation is concerned, is true ; but with full speech other influence is brought to bear—namely, a difference in the proportions of wind and reed. To produce *e* (English) the larynx is higher, and to produce *u* the larynx is lower than it is for the central sound *ah*, so that, assuming equal pitch for each sound, we find for *e* more tension of vocal cords, and less consumption of blast, while for *u* we find less tension, and consequently greater consumption of air. The intermediate vowel sounds, of course, lean one way or the other. But all these vowel sounds are sometimes automatic, and are uttered under reflex action from a moan to a shriek, according as the direct nerve-current influences the immediate instrument of sound, or the entire body—that is, according as the

feeling experienced be acute or massive ; so that we get language as the natural outgrowth of our construction. In this instrument of voice pitch can be made in two independent ways, by tension of cords or by increase of blast. This is readily proved : on pressing backwards at the point of the Adam's apple, and uttering a sound, when the finger is released the sound elevates itself ; on sustaining a sound and giving a blow on the chest the sound momentarily rises in height. The vowel sounds of voice may be best represented thus :—

Equal combination.			
	A		
	E		O
I			U
String.			Wind.

We will now trace the fall of control involving the decline of tone, and then show the means of restoration and the consequent rise of vocal power. This involves definitions. The object of speech is to say what we have to say in the shortest space of time, and speech sacrifices everything to attain this one end ; but the object of song is to say that which we have to say in the deepest and intensest mode ;* hence this latter appeals to man through all his powers of reception ; the former owes its strength to profundity, the latter to amalgamated forces. Now oratory, that scarce-existing art, unites both speech and song ; the orator is a more subtle composer than the musician, while he at the same time uses all the forces of the poet, not only to enforce,

* “And in their first learning of notes they shall be taught the great purpose of music, which is to say a thing deeply, in the strongest and clearest possible way.”—Ruskin, “*Fors Clavigera*.”

but also to convince and to persuade, and, joined to all these, he becomes his own executant, thereby showing the masterful control of the singer over the instrument through which he displays his intellectual power and the feelings of his heart. That oratory should have fallen is the natural result of ignorance in these matters, and that it will continue a rare and accidental thing is equally true, until the false theories of fanciful musicians be rejected, a truer basis supplied by scientific men substituted in their stead, and voice training be recognised as a separate and distinct field of action. Words, as Mr. Carlyle says, are but metaphors; they mean nothing in themselves, but stand for past perceptions, and only possess intrinsic merit according to their power to awaken or remould the relics of the past through which conceptions can be gained; but a beautiful sound of voice appeals direct to the emotions. Mr. Bain very truthfully points out that the contrast between music and speech expresses exactly the same distinction among effects on the ear as a blaze of sunshine and the sight of a watch do among the effects on the eye—one serves for the purpose of immediate enjoyment or emotion; the other is nothing in itself, and derives its value from our intellectual applications. One mode of appeal yields a large measure of distinctive character of emotion; in the other the emotional character is feeble, and its function is to supply the materials of the intelligence. As the orator, added to his intellect and knowledge, must have full control over all emotional effect, and as he cannot have this without perfect control over the voice, we will briefly trace down the fall of vocal tone. Weakening

at 1 (p. 30) we obtain *b* ; at 2, *d* ; at 3, *g* *hard*. These, losing in power, require a substitute of sound upon which they can be superposed ; hence partial approximation at 6 is introduced, and we thus get a series of compound obstructives, and the consequent associated nerve-currents through the brain. This principle of substituting for local weakness associated force is still further developed : altering the channel of exit and closing at 1, we get *m*, closing at 2, *n*, and with further development we get the close aspirates, *f* at 1, *s* at 2, and the compound aspirates *v* and *z*, until we ultimately arrive at the height of unmusicality, expiratory air forced out by voluntary pressure unimpeded in its exit, giving the letter *h*, the letter *h* being the exact polar contrary to true musical sound, for it is made by the uttermost disjunction of the opposing forces A B, A B (p. 34). Physically, in speech, man blocks, crushes, splits, and slides, columns of air in motion. Now as the first principle of language is rapidity, so it follows that to gain this, continuity must be yielded ; hence it follows that to extend a vocabulary according to the ever-increasing wants of civilisation, consonants are called into greater use and vowel sounds are dropped. Coleridge, in his "Table Talk," supposes a language made entirely of consonants ; and now we find such in daily use in our shorthand system, which is solely an extension of the rudimentary principle, rapidity. Let the reader test the past statements by whispering *p b*, or *t d* : it will be noted that *p* is *b*, as *t* is *d*, only made by a stronger nerve-current. Next note the difference out loud : *p* is an explosive carried by the force of a vowel succeeding it, *b* is a suppressed

vocal tone exploding into a full vowel. But the aspirate *h* is the same whether uttered aloud or whispered—the air escapes as water runs through a sieve.

So that amongst the people of every nation we find two forces at work, one of development, one of restitution. The scholar is ever seeking for new symbols to express things or states of consciousness, while the man of small intelligence or few demands makes his words subservient to his bodily convenience ; the one adds and sharpens the consonants, the other slurs or drops them, and works on vowel tones ; and this is the reason why the voices of the lower orders are generally more sonorous than those of the upper. The more developed a nation, the fewer inhabitants proportionately use their language absolutely aright, for the language shows the intellect of a nation at its best, and the higher a development the greater the culture required to attain it, and the fewer persons with innate capacities capable of grasping it. Thus, accepting sounds as symbols, we find a natural power differently applied, which, while serving its purpose to the full, does not secure man in its use from substantial error in other equally natural directions. This shows the prospective benevolence of an Almighty Power forming with increased civilisation new spheres of action in which man may find true work. And in further corroboration that the downfall of tone is owing to the indirect daily action of articulate speech, it may be noted that children's voices are clear, musical, and sympathetic ; they have not had sufficient use to cause the loss of relationship between natural pressure and resistance.

If a man be obliged to make himself heard, he will obtain power in some sort of way if he can; but the chances are, if obtained, it will be obtained in the wrong way. It is curious to trace how this is brought about; for instance, the sharp thin sound of the "Cockney" dialect is the inevitable result of a forced power generated falsely. The constant noise of traffic compels in speech a sharp, clear sound, and, given the induced debility of the attracting muscles, this is brought about by lessening the size of the passage above the organ of voice, thereby decreasing the volume, but by constriction gaining in power. And it may be noted that a sort of opposite to this is shown in the dialect of the "Black Country;" this dialect opens the sound, hence the credit of the Birmingham choir for "volume." Moreover, there is a class of men who seem especially to suffer from their attempts to create power falsely, so much so, that the result upon themselves has given the name of "the clergyman's sore-throat" to the disease. Of course, all those who of necessity use the voice much thereby cause a greater flow of blood to the parts, and the parts being exposed, would be more liable to be affected by sudden change of temperature or by dampness than parts of those not so speaking. But this fact of itself will not account for the disease, for it has been observed that those who can produce true tone do not suffer therefrom; the "better"-ness is the result of principle, not of practice, and one who starts falsely only becomes more astray by his continuous false use. So far as this disease is concerned, the first prompting cause is the substitution of constriction at the fauces for the true obstruction at

the cords. A tightness is felt just under the jaws, and in a little while the speaker complains of his throat "aching." This substituted power presents in its attainment the whole mucous membrane lining the parts above the organ of voice to a constant irritating process, which, gradually producing a chronic inflammation, may extend downward to the organ of voice itself. This state of congestion owes its first germ solely to false vocal production; so that, as "prevention is better than cure," it would be well for us to convince ourselves there is *every necessity* for seeking in the larynx itself the power of rightly creating tone. Dr. Morell Mackenzie calls the disease "the costermonger's sore-throat," and he attributes it to prolonged efforts at an unnaturally high pitch. But this is not a true solution, for rightly trained singers sing higher than such persons, and with greater prolongation of sound, yet do not so suffer; then we are forced to adopt the truer explanation, the cause of this disease is force falsely sought, aggravated by height falsely formed.

Now, these are the attributes of voice in civilised man. We have (1) *tone* resulting from an intrinsic nature, which gives the *timbre*. This is a Universal Attribute. Then we have (2) *hue* resulting from a modification of the first, in degree compulsory from forms of speech, in degree voluntary from mental desire; in part a Universal, in part a Particular attribute. Lastly, we have (3) *taint* resulting from idiosyncrasy of language pushed to extreme, or arising from direct efforts to produce results by false means. The sonority observed in the speech of an Italian is owing to the "tonicity" having

been retained, for vowels do not necessarily cause the tone, but they allow true vocal tone to grow simultaneous with, and correlative to, the growth of speech. In English, on the other hand, the induced weakness of the attracting muscles forces a compensating obstruction to grow with the growth of our words, so that the preponderating vowel sound in English is *e*; physically, smashed air in the mouth gives our Anglican hue. As vocal tone does not exist in whispered words, and as the strength of it is found in the vowels, let the reader test this statement by picking out the vowels in any piece of English writing, uttering them aloud phonetically. No further proof will be needed to show which sound is mostly used. Some further curious philological propositions exist, but must be passed over.

Then, to sum up this part, we find with increasing want of words an increasing principle of action throwing the horizontal force which produced vocal sound out of parallel lines, and, as a necessary consequence of this, we find the perpendicular force weakened; hence, on the principle of natural compensation, we find additional force brought from below by an act of will, which force, owing to the wedge-shaped approach to the vocal cords, aggravates the evil by forcing open the true opposing means from which musical sound is emitted. That the English language is an *h*-producing one, anyone reading the Psalms can readily see; and, taking the converse, how many Englishmen *dare* utter loudly a word beginning with a vowel? If attempted, either it would not be done, or, in spite of the speaker, owing to weakness of the muscles which draw the cords together, an aspirate

would precede the vowel. (Thus the idiosyncrasy of our people's speech is deadness, weakness, and general feebleness.) All nations have their national taint induced on the voice by spoken words, but it suffices to show the Anglican taint, a true voice becoming Cosmopolitan. The case stands thus : As breath is a condition of our life it always goes on independently of us, but as the utilisation of air in motion is voluntary, so we have between absolute disjunction and complete approximation (this latter being the only possible means of true musical sound, as has been shown) all the varying degrees between the two positions ; and the use of articulate speech conjoined with vocal utterance disturbs the normal balance of the latter, which was to be proved.*

However great a paradox it may seem, it remains true to all time, that the more beautiful a word as a sound, the more such word frustrates its accepted function by clinging as a pleasing sensation in transit, for so clinging, it does not use its full force to awaken or to evoke an

* The following passage illustrates in excess the direction of error daily being induced by spoken words :—"This (*i.e.*, loss of voice) was at once explained by the laryngoscopic examination, which showed that there was not the slightest approximation of the vocal cords on attempting to speak, and the glottis remaining widely open, a large volume of air was required to be forced through it in order to produce even the faint whisper above mentioned. This demanded an effort of the expiratory muscles which was very fatiguing. The larynx appeared in every way healthy." And further on it stated that after an application of electricity "the voice had become very much louder, so that it could be heard the length of a large room, and the patient no longer complained of fatigue, even after a long conversation. But at this point the improvement rested. On attempting phonation there still remained a triangular opening in the glottis posteriorly, showing that the arytenoides failed to act."—*Medical Press and Circular*.

idea ; this is because the direction of thought, as embodied in spoken words, is always to hide or sink the material in the purely abstract spiritual. But when man speaks, the self-contained force conveyed by the "letter" is modified by an outer manifestation of "spirit," shown through other channels beside that of words. All liberty is dependent upon obedience ; man's response to his will is ever restricted within a small compass, in one direction for his advancement, in another for his retrogression. Within this limitation he has freedom of action, and he may change the scale forward or backward, but under every condition the ultimate outlines are sternly defined. Being so, the effect produced by a speaker influencing an audience may be twofold—(1) acute, (2) massive ; if the stimulus be in words alone as such, then it is "acute," but to be effectual in such case, each hearer must be in his desire of advancement, in his power of advancement by past culture, and in his innate faculty within the limitation which affords him contact with the speaker's intelligence, or in other words, both one and the other must be nearly upon a par. (Prof. Ruskin says the same thing when he says, no man can be rightly appreciated save by an equal or a superior ; his inferior may underrate him in ignorance or overrate him in enthusiasm ; but he can only be known by the former.) (I am not sure of the exact words, but that is the purport of them.) As a state of approximate equality between an orator and his hearers cannot be assumed in large audiences, where numbers are concerned, a "massive" appeal is necessarily needed, the greatest force to the greatest number being the order of appeal. In song,

and in a subtler sense in oratory, man is appealed to through *all* his powers of reception chronologically arranged, hence the power, and hence the charm. An orator, for one end, unites the forces found in Sensations, in Impressions, and in Ideas, and he can only do this when he possesses absolute control over voice.

But there are other aspects of our subject which have been ignored both by teachers of elocution and teachers of song. Nerve force has a tendency to distribute itself over the whole circumference ; it is, therefore, a sign of culture when a nerve-current is restricted to one set of muscles. Now, there are movements tied together, as in the case of the eyes, which cannot be separated ; and there are associated movements acquired by continuous use, which in some cases, for a true use of either set of muscles, require to be decomposed. These acquired associations are brought about by the following natural law : Everything we do has a tendency to recur ; an act is easier the second time than the first, easier the third than the second, and so on ; finally, we eliminate consciousness, and hand the mode of doing the thing over to habit ; we have to think to do it otherwise. “ A stream of conscious nervous energy, no matter how stimulated, causes a muscular contraction, a second stream plays upon another muscle ; and the fact that these currents flow together through the brain is sufficient to make a partial fusion of the two, which in time becomes a total fusion, so that one cannot be commenced without the other commencing also ” (Bain) ; and the same principle goes on in the spiritual as in the material existence : thus the brain works unconsciously in the direction in

which it has been propelled—thoughts, like actions, have a tendency to recur. What, then, do we learn? We see clearly that by spoken words we have built up a force in our minds, and a force in our physical construction, each for evil, each of which has to be revoked and new phases of thought and action built up and made “secondarily automatic” before a man can venture to proclaim himself an orator. In other words, we must use our instrument in accordance with Nature’s laws, and be able to play upon it simultaneously with, but independently of, spoken words: that is, we must undo the association between the parts producing consonants and the parts producing vocal tone. Whether it be oratory or song it is all one; song is but an inferior species of oratory, with an exaggerated force on rudimentary component parts. Here, then, is oratory presented in a tabular form:—

Fundamental qualifications	Of mind	- Developed intellect - Knowledge of language — the neutral ground, or mediant between actor and recipient - Retentive memory - Rhetoric - Logic
	Of matter	Perfect control over the conveying medium, the organs of vocal utterance and articulate speech
Accessory qualifications	Of manner	...Action
	Of style	
	Of delivery	- Inflection—power and softness - Modulation—cadence
	Of sense (sensuous)	- Quality - Clearness - Smoothness - Volume - Intensity

That tone is the basis of all vocal emotional expression is readily shown.

“Tones of voice betoken emotions which no words can express. Music is the most natural and direct expression of feeling that we have, whether it be joyous or otherwise. As a general rule, it is by sound we come into the closest contact with sentiment and motion of every kind” (“Introduction to Mental Philosophy,” by J. D. Morell, M.A., LL.D.). “There is a similar sublimity or beauty felt in particular notes or tones of the human voice. That such sounds are associated in our imaginations with the qualities of mind of which they are in general expressive, and that they naturally produce in us the conception of these qualities, is a fact so obvious, that there is no man who must not have observed it” (Archibald Alison, LL.D., on “Sublimity of the Natural World”).

Tone is at least a direct presentation of a sensuous pleasure, but it can become more; through it can be given a direct presentation of an inward natural beauty of soul which no words whatever can convey; whether in song or speech, a control over the means of producing this tone is the first step, the first essential of good performance, for tone alone has the power to individualise the impersonality conveyed in a word.

“Now, all right human song is the finished expression, by art, of the joy or grief of noble persons, for right causes. And accurately in proportion to the rightness of the cause and purity of the emotion, is the possibility of the fine art” (“The Relation of Art to Morals,” Sec. III., Oxford).

Daily increasing attention is being directed to this, and the questions before us are, who shall teach this thing? and how?

Prof. Ruskin, in his inaugural address, delivered at Oxford in 1870, said : " I think that general public feeling is tending to the admission that accomplished education must include not only full command of expression by language, but command of true musical sound by the voice." But hitherto the voice has been left to such professors of music as have chosen to assume the power of its culture, and the erroneous attempts to explain the phenomena of this most beautiful of instruments would tend to convince us that voice training is not their work, but is more the work of the surgeon ; a musician has to show the right use of a possessed power in a specific direction through accepted methods of demonstration : we do not expect a pianist to be a wire-drawer, nor an arm-setter, neither need he be a voice-setter. It is the physiologist's duty to explain the construction of parts ; it is the surgeon's province to readjust parts mutually disarranged—to restore a disturbed relationship, but not necessarily to explain the physiology of the parts affected, and this surgical work always precedes the application of a power for a given end ; finally it is the voice surgeon's duty to explain principles of readjustment. By invading a distinct and separate science the musician even lost sight of his *professed* work, which, as we have seen, was to explain how an instrument, not acting aright, can, under its then conditions, be brought to act aright, and ventured to tell us, invariably failing, how the instrument works *irrespective of varying conditions*. The question for a speaker or singer is not so much how the thing acts, but how to get it to act aright, when not so acting—purely a surgical question. Nature has created us that

when in health we do not feel we have parts ; consciousness without sensation is a law ; to feel we have a tooth is to have a toothache. Actions acquired and rendered automatic are known to us through consciousness, never through feelings. So in song and speech, Nature tells us we only sing aright when consciousness alone informs us of the fact ; if we “ feel ” we abuse the laws of our construction by erroneous use.

There has been no recognised school of oratory since the antique, so we can only extract information affecting the voice from past and present schools of song. During the last ten years more writing and still more talk have taken place upon the question of the voice than all the past experience of bygone years can show, yet history tells us that by uniform superiority in results a method of training *did* once exist, that, so far as it went, was true in at least one first principle, and history tells us that now by failure in results this method is for the most part lost.

Let it be observed, the study of the voice is not like the study of an instrument detached from man ; in this latter, everyone commences equally incapable of the desired control, but in voice a partial control may actually exist. In some cases students, having accidentally retained or dropped into the method of true vocal emission, have learned singing from musicians, and by the thoughtless public the master has been unjustly accredited with the result of the voice beyond its specific musical training. In order to sustain such reputation, these mistaken men have published treatises containing visionary and imaginative theories on the voice, purely

hypothetical, which accounts for the numerous theories conflicting; nor had the few men who taught truth the power to prove, on scientific grounds, the correctness of their teaching and the fallacies of their opponents; so now, midst all the talk and all the printed works on vocal art, we find but one book that instructs the first step to after excellence, which step it is our duty to rescue from surrounding error.

Voice production affects the pulpit, the platform, the forum, and the stage, and the principles of restoration should be known to every national school teacher throughout the kingdom, and especially should they be known to every medical practitioner, for voice production embraces a far wider sphere than music, and penetrates where the latter never enters. It is said "prevention is better than cure;" by true use of voice chest disease could, in many who have its tendency, be successfully warded off, this because a greater consumption of carbon takes place, quickening circulation and hastening digestion, so that true speakers and singers feel only hunger after work. Purely as a question of health the voice should be cultivated collaterally with the culture of words, both spoken words and vocal tone should grow up together, but each power should be taught in its specific mode.* While medical men have often recommended the healthful exercise of song, they have never made their word of worth by troubling to go deeper into

* The only position regarding the voice tenable by the musician as such, compatible with honesty, is that of beginning training from earliest years of life, for such position is based upon a principle of Conservation instead of Restoration.

the question and deciding what work is right work, what wrong; this they should now do. We know how important it is to change the air we breathe, so that what we take in be not vitiated; how much more important, then, that the air within us be pure, and be not portable poison; yet all cannot be thoroughly vitalised within us unless we take either violent bodily exercise or obtain true use of voice. But in degree attention has been drawn by outsiders to this matter, and singing, under the generic term "music," has been introduced into our national training schools. Unfortunately the two methods in use are worse than useless, for while professing to teach "music," these methods destroy in more rapid degree than spoken words the true conditions imposed by Nature for producing vocal tone.

— We proceed to examine such teachers as we have. These may be divided into two classes: firstly, those who enforce vocal utterance and articulation together (Sol-Faing); and, secondly, those who train the organ of voice separately. Of the first class we may say, if it be true, "that the association of a given syllable with a given sound," as "a help to the beginner in vocal music is admitted in almost every existing system of teaching," it must be equally true that the propagators of "almost every existing system" are ignorant of the simplest laws of the human mind, for any rudimentary work on mental science will disprove them; nor can they get one logician to support them. But it is not true, a beginner is impeded, not helped, by the association of sound with syllable. Much strength has been given to this false

method of procedure by the opinion of the late Sir John Herschel ; he wrote in the *Quarterly Review* to the effect that he supported the "movable Do," and considered the "fixed Do" as a retrogressive movement in teaching song. It is a strange thing that whenever we get a great man we at once set to work to extort from him an opinion on something or other in which he is not great. Sir John did not know, nor could he be expected to know, that the association of words with vocal utterance is the common cause of weakness, incapacity, and distortion ! Still, his error is not so mischievous as teachers cause it to be ; he advocated that a word or syllable should "represent" a given sound, and that is a vastly different thing to its being made the means of presenting one. To expose the fallacy : the first thing logically done in order to generate in a person a perception of a difference is to remove all differences but the one required to be perceived, for by so doing no extraneous contrasts distract the observer's attention from the required point. An uttered word or syllable received by a listener for the first time appeals to him solely as a new sensation, and in his mind is unconnected with other perceptions ; the sound expresses nothing, evokes nothing ; it is a noise pure and simple, and can never stand as a symbol of another thing unless a perception of that thing be possessed and association has taken place in the mind between the two perceptions, the noise and the thing. As the ultimate test of discernment is shown in a person's subtlety of perception—that is, in seeing minuteness of gradation either in sound or colour, it is necessary, in order to evoke first perceptions

in sound, to take for beginners, even for strengthening speech, some broad differences; hence the rudiments of music are rightly used as the simplest means of voice training. Music is accepted pleasurable disjuncted sounds relatively arranged in successive, or in simultaneous and successive order. Now the perception of an interval or distance between two sounds is either possessed or it is not; if a person has it he does not want to learn it, if he has it not no uttering of syllables can evoke it, for the two perceptions have not been associated, so do not cohere: we cannot awaken what has never slumbered. A word, then, always *follows*, never *precedes* the perception of the thing for which it stands; so it may be affirmed both "movable" and "immovable" words *impede* the desired discernment of difference between two sounds of different pitch by bringing in other extraneous and confusing differences not required to be perceived. A man can readily identify the pitch of a note when sounded in a familiar voice, but "on a strange instrument it is less easy to make out the identity, the change of quality in the note, the greater or less emphasis, the different duration of the sound—as in comparing the piano with an organ—all tend to *disguise* the pitch and to render a more delicate or a more cultivated ear necessary for its discernment." —(Bain.) The position, then, of modern musical intelligence, so far as song is concerned, is this: 'The association of words with vocal tone by long use fuses together two or more sets of nerve-currents flowing simultaneously through the brain, which currents mutually influence each other to the hindrance of a required simple percep-

tion ; next, a particular association is wilfully induced, under the garb of culture, by joining set syllables to given sounds. This association has afterwards, by long practice, to be decomposed, in order that ever-varying and different words may be used with similar distances in sound—in brief, people virtually start with an induced error and pay to add a fresh one. “ For every act of memory, every exercise of bodily aptitude, every habit, recollection, train of ideas, there is a specific grouping, or co-ordination of sensations and movements, by virtue of specific growths in the cell-junctions.” * Being so, right work consists in going back to first principles, as shown in infant life, and starting with complete isolation from all collateral issues. This brings us to a consideration of the second class of teachers—namely, those who train the instrument of voice apart from musical expression or word adjustment ; here we naturally drift to the old school of song, as presented to us by S. Garcia. And this is his receipt for first start in study : “ Keep the tongue relaxed and motionless, avert the base of the pillars, and render the whole throat supple.” (Better have said breathe through the open mouth, but feel no parts.) “ In this position breathe slowly and long. After being thus prepared, without stiffening either the larynx or any other part of the body, calmly and with ease attack the tones very nearly by a slight motion of the glottis on the vowel A, very clear ; this motion of the glottis is to be prepared by closing it, which momentarily arrests and accumulates the air in this passage ; then, as suddenly as the pulling

* “ Mind and Body ; the Theories of their Relations.”

of a trigger, it must be opened by a loud and vigorous shock, like the action of the lips energetically pronouncing the letter P." And he adds, "This first lesson should be insisted on, as it is the *basis* of all teaching. I again recommend the shock of the glottis as the *only* means of attaining the sounds purely and without bungling." Now this, small though it be, is the only principle of training that has ever been known successful in results; by it great singers have been made, without it, many possessing all other requirements have failed, and it served its purpose before the introduction of the laryngoscope. We have to see what this "shock of glottis" is; why it restores the instrument to its natural conditions for creating sound; and how Nature acts when rightly used.* ✓

To proceed to a true explanation of the vocal phenomena. What Dr. Wyllie stated as the result of his experiments upon the detached larynx holds with equal force in the living subject; if, as he has proved to be the case, the strength of such comparatively minute structures

*The following curious perversion of S. Garcia's method is to be found in an accredited musical authority: "When Garcia and other voice trainers speak of the 'shock of the glottis,' and when Dr. Rush, Mr. Melville Bel', and other elocutionists speak of the clear 'explosion' of vocal sounds they refer to the firm closing, followed by the distinct opening of these lips of the larynx. The action of the lips of the mouth in pronouncing strongly the letter *p* in *papa* will illustrate this; and the 'shock of the glottis' may be *felt* in a slight cough, or in pronouncing clearly the letter *g*, as in *game*, or *k*, as in *keep*."

In a case of congenital deformity submitted to me, it was found that the patient could not produce any faucial explosives (X, K, Q); these all became aspirates; but full and true tone could be produced from the cords.

as the intrinsic muscles of the larynx which close the edges of the cords be insufficient of itself to withstand the automatic chest force brought to bear upon the true cords, it must be equally true that these muscles cannot of themselves supply sufficient resistance to overcome the force of air when producing vocal tone ; therefore there must be an inverse force removing the strain, for if there be not, the air acting from below upon the vocal cords will wedge them out of their parallel lines, not by their natural elasticity yielding to pressure, but by the attracting power which brings them together giving way ; the cords would, in fact, be forced to resume in degree their state of repose, presenting a fissure of an isosceles triangular form, a form incompatible with the production of true musical sound.* We know that the contraction of any muscle demands two fixed points of resistance at its extremities, and if one of these break loose the force of contraction had nothing to expend itself upon, and thus a false position is incurred. In false emission, as induced by spoken words, the chambers are *not* inflated ; thus, the muscles which draw together the vocal cords have to bear the brunt of the whole chest pressure, and being of themselves too feeble to resist, of course succumb, and that is the sole reason of all feebleness and incapacity. So that Dr. Wyllie's discovery of the use of the false cords and

* This balance of forces presents a subtle question of hydrodynamics. There is the perpendicular balance between the diaphragm and the larynx, and there is the horizontal balance between the permanent and the temporary point of impact of the cords : the first is dependent upon the second, and the second is dependent upon the first.

the ventricles just amounts to this : It proves that Nature has ordained compensating forces, under which condition the minute muscles of the larynx can accurately act, but that under less favourable conditions these muscles can only partially fulfil the functions for which they are destined ; this is in strict conformity with Nature's universal principal of "least action" (see Rev. Dr. Haughton on "Animal Mechanics"). In true song or speech the work of counterbalancing different degrees of pressure from below is done by the air being inverted, and forming an eddy in the chambers or spaces between the true and false cords. This is proved (1) by the fact that under the conditions of true sound the chambers can be felt to be puffed out, while with false sounds they are not so felt ; this accounts for the breadth of throat in public singers ; (2), a true vocalist does not feel as though he were forcing air out, but as though he were actually drawing breath in, and this even when emitting the most powerful sound : in false emission it is not so, the point of resistance breaking loose makes him feel as though he were running after a note to catch it ; (3), a true vocalist *knows* but does not *feel* he is singing ; consciousness is the sole guide ; (4), under such conditions the sound can be sustained at full force a considerable time, showing the economy of Nature ; and the sound can be increased inversely to the quantity of air held in the reservoir below, this, too, without studying the *crescendo* and *diminuendo*. Power, beauty, ease, and endurance are four different aspects resulting from the same state of balance. But in false song or false speech the instrument of music is only used to partially catch the air in transit,

and owing to this artificial mode of use it cannot resist the full force from below.*

Here I would ask the reader to pause and inquire—Have I, or have I not, made out my case that language induces a local weakness? for if I have, this follows: All teaching that does not appeal directly to the correction of this weakness is false. Now, as I read history, nothing can show the failure of modern teaching more than the high price demanded by public vocalists, for price is regulated by demand and supply. Moreover, the number of those who excel compared with the number in past years is, one would think, conclusive proof of the truth of the old system—a system which took the relic of a shattered voice and gave us—a Lind! If, then, spoken words disturb a resisting force, we must admit that the cause of such wholesale destruction of voices as we see prevails amongst the multitudinous students who study must be owing to teachers appealing for results to *chest pressure* rather than to readjustment of *local opposition*; for while speech disturbs, such tuition aggravates evil and destroys—it turns up the edges of the vocal cords, as a man might blunt the edge of a razor.

The physical difference between right and wrong production explained, we naturally proceed to explain

* The following extract affords a splendid and unintended corroboration of my application of Dr. Wyllie's discovery:—

“In the howling monkeys of America there are several pouches opening from the larynx, which seem destined to increase the volume of tone that issues from it—one of these is excavated in the hyoid bone itself. Although these monkeys are of inconsiderable size, yet their voices are louder than the roaring of lions, and are distinctly audible at the distance of two miles; and when a number of them are congregated together, the effect is terrific.”—*Carpenter's Phys.*

THE METHOD OF TEACHING.

By holding the breath the ventricles of Morgagni (page 34, E) become inflated; the air catching in them causes the larynx to rise, and tightly closes the apertures; by ceasing to will to hold an explosion of the condensed air takes place. Virtually, this last explosion is nothing more nor less than the first cry as presented by infant life, and is practically the same as what was called "the shock of glottis;" it is an audible result arising from the false cords releasing condensed air imprisoned below them, which air in its release explodes. The Second Law of true teaching is, therefore, the Valvular Action. Now, either the false and true cords may act in unity alternating between approximation and disjunction, like scissors, as in laughter, or the false cords alone may separate, assuming a fixed position, while the true cords, by their natural elasticity, may alternate between parallel lines and ovals; the first is the condition of false production, the second of true. This first step of voice restoration is only an application of the automatic action that takes place at birth, and an application of this can alone enable the speaker to utter loudly any word beginning with a vowel; it is a sharpening of the nerve-current of the organ of voice, just as *b* is sharpened into *p* by the action of the lips: Continuity of tone naturally results from retaining by an act of will the conditions assumed in the onset by Nature. To strengthen weakness we use muscles at full flexion. Then, the Third and last Law of training is Equal and Full Power—full

power to strengthen enfeebled muscles, equal power to ensure no change of state in the relationship of the parts each to the other. The whole gist of study may be summed up thus : Hold the breath on deep inflation ; by ceasing to will to hold Nature sets the instrument in accurate action ; let the involuntary pressure continue the sound, and by repeated use in such manner the instrument will in time become habituated to right action—a servant to our wills instead of a tyrant crippling and frustrating our desires. It is strange that, exactly at the same time German assumption was doing its uttermost to destroy the little known in voice training, a medical man should be making experiments in Edinburgh, which ultimately resulted in the greatest scientific discovery affecting the science of voice production that has ever been put before the public, and which discovery conclusively supports, from a scientific point of view, the teaching of the ancient school of song. Dr. Wyllie's explanation of the use of the false cords and the ventricles gives the true solution to the right use of voice, the air in the ventricles acting somewhat analogous to the air which a trumpet-player imprisons in his cheeks ; the greater reservoir of air keeps the lesser one always full, and the control of measured force from the greater is dependent upon the fulness of the less, this simply owing to the distribution of nerves. Now, no man can speak or sing with perfect self-possession and accurate response to will unless he has masterful control over the respiratory apparatus, and no man can have this control unless his organ of voice be rightly used.

There remains to be shown the best mode of self-

study, and the influence of second causes upon pitch, so that the student may know what difference in hue to accept as true and what to reject as false ; this because compass is as much a means of oratorical effect as it is of song. The best starting point for study is the note produced by sole approximation of cords, wind and reed equalising their respective force, for in this the conditions both of elevation and depression of pitch are not involved ; the note produced from the detached larynx by imitating the action of the muscle which contracts the fissure would give the easiest sound in the living subject ; this, in the average adult, male or female, is middle G, and in strange corroboration we find G accepted long ago by priests as the most convenient note upon which to recite words. Having fixed the station note of equally sustained tone and of unflagging strength, all notes below are made by the larynx sinking and the attendant relaxation of the cords ; from the detached larynx, male and female, Dr. Wyllie produced an octave below the station note ; a like octave can be produced from the living subject. For the notes above G the larynx rises, and in rising causes increased tension of cords and a correspondent elevation of pitch. In this ascent the thyroid and cricoid rotate upon an eccentric centre, causing the planes of both false and true cords to become with each heightened tone more diagonal, thus, the sound, travelling at a right angle to these planes, finds its point of impact on the arch of the palate more and more forward with each ascending sound. A change in hue arising solely from change of direction has been a great source of error in our teachers, who, when speaking

of "registers," have been invariably misled by this. The object Nature evidently has in directing tone is that with equally developed force vocal utterance and articulate speech can be simultaneously used without one influencing for evil the other. This affords another proof of the superiority of the fast dying old school which insisted upon "a forward production" as a basis for song; and the reason why the larynx does not assume its right elevation for higher notes than the station note is because during our past years it has only been used *indirectly* to strengthen spoken words, so that a tendency has grown up in the larynx to assume and retain the average altitude of language and to leave the production of all notes of greater height than the average to will-force acting through the chest muscles alone. Consequently, most untaught persons produce sounds above the station note by excess of blast, as seen by the rapid exhaustion of air, as heard by the point where the sound strikes being far back in the mouth, and as felt by the Adam's apple being low, and finally corroborated by a feeling of personal fatigue when such notes are given forth. The corrective study for this is having recourse to a steady spring from organ itself; this, by practice, induces a habit of rising until a position of highest elevation is fixed. It may be added, experience of years of voice training shows that about C is found the best place for fixing the first central tone, and from this working downward to G inclusive. A curious phenomenon occurs about D or E: if the larynx ascends above this point the sound is propelled directly out of the mouth without any reflection on the arch, so that a

shout or noise results. No doubt this is the production spoken of by Dr. Mackenzie as of "too high a pitch."

This, then, is the natural law ; as soon as the sound obtains *no* reflection the scale must be continued by letting the larynx *sink* and going over the preceding five notes, G to D, with greater pressure, thereby elevating them a fifth (full harmonics). The descent of the larynx about high E can be felt with the finger. (All these notes above the high D are producible in more ways than one, but all depend upon a correct emission of the tones below, so that the old teachers were right in insisting on fixing middle and low notes, although they did not know the reason why this should be done. In *soprani sfogati*, *tenori robusti*, and in all low voices of either sex, the notes above D are full harmonics produced by increased blast acting upon the cords fixed for a fifth below ; but in "light" voices the notes above D are harmonics on a "node" from the cords fixed for an octave and some for a twelfth below. [By emitting a deadened high note (*falsetto*) and pressing above the thyroid with finger and thumb the sound will suddenly burst out in a bright clear tone ; this is the production sought for by light singers.] In the living subject there are three series of tones : one set produced by Relaxation, one set by Tension, one by Reproduction ; and the physical facts producing these three series are made manifest to man through created sound by three Entirely Natural but different Hues. We know that air confined in spaces will strengthen and re-enforce sound (Mr. Sully in his admirable essays calls this "co-vibration") ; in a human body there are three caverns filled with air that

influence tone—the chest, the pharynx, and the mouth—and that cavern which of the three exercises the preponderating influence in tinging tone has hitherto been used to give a name to that series of sounds so tinged ; thus we have one set of sounds termed “ chest,” and another “ head.” Moreover, with an increasing current of air from below, the sound is carried by the current in one direction and impeded in a contrary one. As all these second causes are absent during observations on the detached parts, and as all remarks in medical works are drawn from this latter aspect of observance, we naturally find men of science writing of the “ register ” of voice (two octaves), while musicians, approaching from a different point, have confusedly brought in all second causes, and so speak of the “ registers ” of voice ; hence the discrepancy in the statements of the two classes of men.

— The sudden change of hue in the female voice between middle F and G takes place just the same in the male voice, an octave lower, but owing to the difference in bodily form the resonance continues in the chest of man where it ceases in that of women ; the ignorance of this physical fact is the cause of much false teaching, and has entirely blinded all previous writers.

Further, it is assumed by voice trainers that because there is a difference of hue between one series of sounds and another series of sounds that Nature causes a “ break ” in the voice, which break has to be “ bridged over ” (see any vocal tutor). But a difference does not necessarily involve a defect ; so what is erroneously termed a “ break ” may with better judgment be termed a “ joint.” A break is a bungle of ignorance, and the

use of the term is giving to airy nothings a local habitation and a name calculated to deceive the public and allure the unwary ; the term itself is based on the assumption that Nature habitually creates man a cripple, and thus teachers complacently proceed to destroy a natural diversity in hue under a pretext of covering an imaginary gap. The hue with which each register is coloured, and which men try to annihilate, is given by Nature for a definite purpose, and is entirely right. This brings us to the science of æsthetics, which science is broadly divisible into that which stimulates, which may be called Motion, and that which depresses, and which may be called Repose. Power will excite, softness will tranquillise ; so with height, and the opposite, depth ; and with quickness, and its opposite, slowness.

<i>Motion.</i>	<i>Repose.</i>
Power. Height. Quickness.	Softness. Depth. Slowness.

The contradictories of any one of the above terms are found in the opposites to the accompanying other two ; thus, the stimulus derived from height can be counterbalanced by slowness and softness, &c.; but in the voice, wherever we require an outer manifestation of constant excitement, Nature has strengthened her æsthetic law by fixing a hue which expresses that mental state irrespective of the words associated therewith ; and wherever we require an outer manifestation of constant repose Nature

in like manner has fixed a corresponding hue. These are immutable results arising from an affinity between the receptive faculty and the intrinsic properties of the instrument. But where all kinds of expression are shown, that is, in the ordinary colloquial compass, the tone is a negative one.*

Voice training was originally the work of past great singers, who taught by imitation ; of late years this work has been added as an inferior adjunct to teaching the piano, the result being that we occasionally get a half-taught singer, who is carefully exhibited at great cost on festive occasions, and caused to sing at us, while we for the most part remain a nation of dumb mutes ; thus the public have got to look upon a beautiful voice as a freak of Nature, or a beautiful monstrosity, instead of being, as it is, a common gift of God to all, implanted in each of us for solace in sorrow, enjoyment in leisure, and spur in work. The difference, then, between the present essay and the faultful suppositions propagated in accepted vocal works is this: each of the existing works is started on the notion that the writer is great and Nature poor and small, while this work assumes man's littleness and Nature's greatness, and asserts that men are better employed in perceiving a true thing than they are in conceiving a false one ; to this end the economy of Nature has been shown, the gradual decline of tone through lost relationship has been traced, together with the introduc-

* Probably this physiologico-æsthetic fact, taken in connection with Dr. Wollaston's discovery of the *susurrus* of muscle, and the additions to this by Dr. Haughton, of Dublin, and Dr. Collongue, of Paris, may give the scientific basis for the solution of the much vexed question of "pitch."

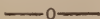
tion of spurious artificial force, and the injurious association of nerve-currents by use of spoken words. The modes of restoration and readjustment by decomposition of nerve-currents and the severance of vocal tone from articulate speech have been pointed out, going back in all simplicity to first principles as shown in child-life; and, finally, the gradual development by steady right directed work has been enforced. We have seen how conflicting opinions have arisen, and how these and observations from different aspects can be explained, and, where each in its way correct, made to agree, and we have seen how science has been retarded by voice culture having got into the hands of a wrong set of men. Of course, a true teacher of music would see the immense advantage that must accrue to his profession if voice trainers had a separate sphere of action. But, instead of that, it is generally assumed that the most difficult branch of all musical training—that of guiding an invisible instrument—is quite an easy matter, requiring no power on the part of the teacher to command any “utterance of harmony” from it himself, nor any skill on his part! Are man’s nerves and muscles easier to be played upon than tempered scales and ivory keys? It is not so, and only because custom sanctions the mode is the fallacy obscured and the ignorance condoned. The intellectual world has not as yet elevated song into a science, so that it has never been other than a matter of imitation; but even the power on the part of a master to do — and exemplify what is demanded is not considered a requisite of modern teaching.

“The greater includes the less.” It has hitherto been

assumed that song is a branch of music, instead of admitting that music is a branch of song ; all that exists in that is included in this, and other things exist herein besides, while so far as voice is concerned, the science of its production embraces oratory in all its forms. Naturally, then, the threshold of art has been in great part barred by false thought on voice. A musician cannot train a voice because he is musical ; the positions are inimical, for the diagnosis telling a state of progress in readjustment of parts producing voice is oftentimes such that a musician, trusting to impressions of pleasure alone, would reject as false the very best of progress, - thwarting a patient under a mistaken plea of retrogression. Again, in making, arranging, or attuning an instrument, pleasurable sound is ever preceded by disagreeable noise. As in all cases of key-boarded instruments this is delegated to the fabricator, the public mind has become oblivious to the fact. If a player had to arrange blindfolded the component parts of his instrument strewn in incongruous heap upon the floor before him, he would glean some notion of what a true voice trainer does. A voice surgeon should not be too musical—indeed, he need but know his notes, but he must know many things rarely or never included in a musician's education. Then let musicians see to it. In claiming to do many things man frequently ends by doing nothing well.

A P P E N D I X.

APPENDIX.



THE BASIS OF MUSICAL EXPRESSION.

“By virtue of such intelligence the ready and effective critic would grow into the philosophic critic, and his judgment would acquire a real weight with thoughtful minds, appearing no longer as the caprices of an inscrutable, subjective taste, but as the conclusions of a clear subduing reason.”—SULLY on *Sensation and Intuition*.

“With abundant ingenuity and no mean success, Mr. Sully endeavours to throw some light of cosmic order into the chaos of æsthetics.”—*The Saturday Review*.

“Get your voice disciplined and clear, and think only of accuracy, never of effort or expression : * * * * most likely there are very few feelings in you at present needing any particular expression ; and the one thing you have to do is to make a clear-voiced little instrument of yourself, which other people can entirely depend upon for the note wanted.”—RUSKIN.

WHEN we calmly reflect upon the millions of persons supposed to learn music, and when we call to mind the thousands of pounds spent by parents for this end, and the hard-earned hundreds spent by anxious and deserving students upon themselves for the sake of attaining proficiency in musical or vocal art, and then look upon results, we must admit—we are forced to admit—that the art of teaching music is comparatively unknown. How many of all who learn excel ? Let parents who pay, or poverty-stricken enthusiasts respond ! Then, let us clearly understand what we want : we want “expression ;”

we want ourselves, and we want those we hear, to sing and play, not mechanically, but with the appearance of possessing a living heart and soul ; we want our daughters to sing the simplest thing in the best way—for excellence does not consist in doing that which no one else does so much as in doing that best which all may be striving to do. Teachers hide their ignorance under a plea that expression cannot be taught, and that “you cannot give feeling.” Now, expression is either a thing to be acquired, or it is not ; if it be not, a person either has it or has it not ; if he has it he does not want to learn it, and if he has it not, it cannot, according to received notion, be acquired : in point of fact, all teaching is therefore vain. Moreover, both teachers and people bandy about the two words “expression” and “feeling” as though they meant the same, instead of being, as they are, altogether different. The cause of all this confusion of thought is the isolated position musicians hold compared with other men ; music is a siren, but too often strangles those she charms ; her force is so strong that she enslaves her votaries, preventing their entering alien fields of knowledge. As the late Lord Lytton remarked : “Perhaps no men are more superficial in their views than those who cultivate one branch of learning, and only one branch ; perhaps no men are less superficial than those who know the outlines of many. A man, indeed, who in letters or statesmanship cultivates only one pursuit, can rarely master it thoroughly. It is by eternal comparisons of truth with truth that we come to just and profound conclusions ; the wider the range of comparisons, the more accurate our inferences. There is an experience of the intellect as well as of the observation, which never can be well attained by exclusive predilections and confined circles.”—*The Student*.

The only thing that can with confidence be affirmed is that different persons have within them powers of greater or less degree, which, under similar conditions of outer influence, will cause one man to be superior to another ; this latent force is awakened first into activity by an outer influence acting upon it through the nervous system. Feelings are

inner states of consciousness, and, excepting the purely organic ones, are invariably the compound result of the receiving faculty and the stimulating outer cause. It is the duty of a teacher so to place truth before a pupil that previously unknown facts may, by their new impressions, generate new states of consciousness. There are feelings which are good, others bad ; there are feelings some of which are right and others wrong. Then a teacher should, by his knowledge, accurately define the states to be acquired, pointing out right from wrong feelings, and after causing good feelings to exist in a student, develop them to their uttermost extent. We therefore conclude that the first object of a learner is to find a master who can, by instruction, evoke hitherto unpossessed feelings. Now feeling is a Power, not a Method. Expression embraces feeling and other things beside ; expression is *the outer manifestation of an inner state of consciousness.* Our purely organic expressions are, of course, born with our birth, but all others require method through which they can be made manifest to man. It is the duty, then, of a master, after having taught right feelings, to teach, through his knowledge of mental and physical facts, the expression of these acquired feelings, and by doing this he gives the student a clear and comprehensive mode of procedure for future time—he gives what may be termed the grammar of expression, so that the student can display what he wishes to display instead of squandering force of feeling in impotent and futile efforts after he knows not what. Whenever two persons are trying to do the same thing with the same materials, and do it in different manners, one of the two is wrong, and the question for the public to determine is—*which is the better way ?* Is a student to ignore thought, and be taught as a parrot is taught to speak, or is he to be taught by explanation and logical proof ? That is the question for us to determine. But to go from generalities to particulars. See how outside knowledge will aid in attaining excellence in musical art. Take the simple thing of controlling a piano by touch of hand. Any beginner in physiology knows that the nerves are not

equally distributed over the whole circumference of the body, but that in some localities they are more acute, in others nearer the surface, and again in others more accumulated. In the hand we find just under those circles or approach to circles in the centre of the inner part of the top joint of each finger the nerves are massed and sharpened, hence a much more sensitive touch is obtained at this point, and this is just where pianists usually prevent pupils playing, so that in the onset many fail in sensitiveness or "feeling" because they are taught to feel through a deader part and thicker skin—they play, as it were, with gloved hands. There should be at least two touches taught, one of power and one of subtlety.

Again, see how the new science of mental action will aid us: We know that habits of action are acquired by successive use, and in such manner is built up our unconscious or automatic self; there is in the mind a similar principle, so that thoughts have a tendency to recur, recurring with greater frequency and with less effort of will each succeeding time, until we have made them also automatic, and we have to will to prevent them. Underlying this there is what is called unconscious mental activity, that is, the mind has an action of itself unknown to its possessor, and the appeal to this psychological branch is the foundation of all excellence in fine art; how necessary, therefore, to know something about this. Take but one example, and see what it proves. Bars are made manifest to a listener through created sound by a periodic accent. Now the mind cannot compare without two things, having some properties in common, being presented to it; so presented the imaginative or conceptive faculty conjures up a somewhat similar image, the abstraction from the relic left by the past impression from the two things. Being so, the accents of two bars stimulate the listener's mind, so that unknown to him his mind progresses in the direction in which it has been propelled; consequently the performer can depress by slackening speed, or exhilarate by quickening speed (p. 70). A knowledge of this basis of all expression would effectually prevent anyone singing or playing tamely; dulness of feeling and

feebleness of mind would then be shown by exaggeration, never by suppression ; consequently all tameness must be put down to inefficient teaching. Genius is out of count in the relationship between master and pupil, for it is, as Mr. Galton points out, the result of unconscious force, and what a master has to do is to teach his pupil what to will, and so develope conscious force, which by frequent use gradually ceases to be such and becomes a habit. But to go to the more important point of public speech. Note how a want of scientific knowledge has caused all efforts at teaching to be futile. All public speakers and all public singers have to teach themselves how to make themselves audible in speech through numberless successive public failures ; they make tentative efforts until they attain approximate accuracy. Now, why is this ? It is owing to an ignorance of natural laws ruling inorganic form, for words that close to appear uttered aright will become at little distance inarticulate noises. The various sounds which united form a word have difference of force within them ; some will travel, others drop, while others again will melt into their neighbour. Intrinsic force and relative force have to be considered in teaching public speakers and singers, yet both are thoughtlessly ignored. Can we wonder, then, at failure ? When we see men like Prof. Bain and Mr. Sully investigating these questions we cannot help but look forward with hope and satisfaction, and although to the frivolous, the idle, and the thoughtless, the application of scientific truth in the attainment of art products may appear as speculative or visionary, those who are striving to unselfishly aid outsiders must know that "taste," as a method of teaching, has received a death-blow at the hands of those two men, and that, as a test and gauge of teaching, it will, when the public mind is awakened, be discarded with contempt. "Taste" is but personal preference, and the public, unknown to themselves, already bow before a higher standard, for they apply to this the terms "good" and "bad." What appears "bad" to many appears to the person who uses it "good," or else it would be rejected ; hence it is as "good" to him. Is a thing good of

itself, whether a person term it so or not, or is there no perfection up to which others can be trained? Shall a man be a law in himself, or shall he know Nature before he pretend to train others in her wake? The public have already answered these questions by using comparative terms to qualify "taste;" let them now go further, and see that at least the rudiments of music are understood, and capable of clear explanation by those who have the future training of their children.

To expand a previous definition: Music is the arranging of pleasurable impressions relative on one side to the relics of past impressions lingering in a listener's mind, and on the other side relative to the conceptions which, in consequence of such impressions, and of necessity, and in strict accordance to psychical law, are formed in the mind by the removal of mental inertia, the unconscious cerebration forecasting the future. Music, then, is a discernment of a natural law existing between inorganic form and our physical and mental construction, and the appliance of such discernment for a purpose. "Composition" is a misnomer; it should be Decomposition. Speech is the arbitrary use of inorganic forms which by accepted association have power to awaken into consciousness relics of past perceptions.

Words are subject to acoustic law, as music is, though the recognition of the fact is usually not acknowledged. The sounds which collectively form a word differ in force and vary in effect. Sounds that are similar, as, for example, when a word ends with the same consonant as the one commencing the succeeding word, have a tendency, according to the law of similarity, to melt together, just as wet colour runs. Whenever sounds are so placed the division between the words should be wider. Next, the open aspirate h is the deadest sound of all, and therefore has least power of transit; it should be increased in degree as the distance over which it is expected to travel is increased. (Explosive consonants must always be exaggerated in large buildings, because noises will not travel as musical sounds will.) Words beginning with vowels have a tendency to attract to themselves the final consonants of fore-

running words (there is also a physical cause for this) ; therefore the width of silence between should be increased. Song is a triple science, and includes the art of voice production, the art of musical phrasing, and the art of word adjustment, and the difficulty in the united application of these consists in the association of conflicting forces possessing constant antagonism, so that each force appeals to a listener in its perfectest form, each acting simultaneously, yet each independent of the other. As regards the music intertwining words, it may be laid down as law that open tones are preferable to closed ones, and that the full duration of musical sounds should always be given to the accented vocal tone. The verbal expression (ideas) should be worked upon the consonants, the musical expression (impressions) upon the vowels. Wagner is the first musician that has attempted to grasp the laws of association existing in song, and, although a want of scientific knowledge has caused him to fail, his efforts must be considered a healthful sign of progress in an art which is painfully backward in its collateral science.

OPINIONS OF THE PRESS ON THE FIRST AND SECOND EDITIONS.

“Among ‘thorough’ musical reformers of the present day, few are better entitled to a hearing than Mr. Charles Lunn ; and it is with some feeling of pride that we look back on the many papers by him, which have appeared in our columns—all conspicuous for conscientious heartiness, and an uncompromising advocacy of what the writer considers the truth. It is an honour to any community to possess a representative of so great a school ; but when it is added that Mr. Lunn, by his own efforts, has collected the conflicting views held upon the Voice, and claims to have evoked from the chaos of them a complete and perfect solution to every difficulty, Birmingham may well be proud of such a citizen.”—*The Orchestra*.

“Mr. Lunn is one of the most earnest and conscientious thinkers of the day, and has a right, not only to be heard, but to be answered. This work contains the result of many years’ reflection ; and as we can scarcely imagine that its writer publishes it for the sake of profit, his only reward can be in the consciousness of having fulfilled a duty by calling attention to an important branch of art which he believes to have been hitherto but imperfectly understood. Without following our author through his elaborate investigations, let us then urge those who are competent to grapple with the subject to give Mr. Lunn’s book a calm and

dispassionate consideration, even should his arguments run counter to convictions which the growth of years may seem to have rendered almost too sacred to disturb."—*Musical Times*.

"Mr. Lunn brings forward his views with great distinctness, and in a remarkably outspoken way."—*The Monthly Musical Record*.

"We need not say very much about this little work, inasmuch as it is reprinted from our own pages. Our readers, therefore, have been able already to form their opinion on Mr. Lunn's views, and enjoy his somewhat pungent criticism. He has very strong opinions on the subject which he has so profoundly studied, and he is desirous that voice culture should be recognised as a branch of the medical rather than of the musical art. We regret as deeply as he can the follies of many speakers and singers, who ruin their voices, set up absolute disease in their throats, and give pain rather than pleasure to all cultivated listeners by their unnatural use of the voice. They come under medical treatment for restoration ; but how seldom can they be brought to consider the propriety of prevention? . . . We have read Mr. Lunn's work with great pleasure, and cordially commend it to the medical and musical professions."—*Medical Press and Circular*.

"The essay will be found very interesting to the medical profession, to the members of which it is dedicated, while every teacher of singing should carefully study it. If Mr. Lunn be right, some of the most popular teachers are wrong, and his arguments are sufficiently weighty to call forth their careful consideration. We have always looked upon the cultivation of the singing and speaking voice as largely comprised within the medical art, and we should be glad for the profession generally to pay more attention to it. We have therefore much pleasure in introducing Mr. Lunn's able essay to our readers."—*The Doctor*.

"We think that the author has proved his point. The little inconsistencies into which the author's warmth has led him are

very minor blemishes in a book which not only seems most praiseworthy in its object, but highly philosophical in its general tone. In order that our readers may have a clear conception of the issues involved, it is necessary to premise that in comparing the human voice with other voices and other instruments, we have to sweep away *pretty nearly all* that belongs to *articulate* speech—certainly all the mechanism of labials, dentals, gutturals, and the like. We then have more or less pure tones to compare as to pitch and quality with other tones produced in other throats, or by other mechanisms. But this question of the register of the human voice, and the best methods of training this organ, is still further complicated by the artificial distinctions musicians have introduced into the nomenclature of voice and voice production. Those who wish to study the voice to help in elucidating this difficult question should have a thorough knowledge, not of music only, or of that and of anatomy and physiology, but of natural philosophy, and of theoretical and applied mathematics also. It will thus be seen that the task is by no means an easy one.”—*Students' Journal and Hospital Gazette*.

“We heartily wish Mr. Lunn every success in his efforts to improve the cultivation of the voice.”—*Birmingham Medical Review*.

“Though small in size, the work is very important to members of the profession that makes its living by the human voice divine. . . . We have no doubt that health and art would be both benefited by the adoption of the principles expounded. The author—who has clearly and logically enunciated his theory—deserves success.”—*The Pictorial World*.

“This little work is a reprint from a series of well-written essays which appeared in the *Medical Press and Circular*. . . . Mr. Lunn, after pointing out various fallacies, proceeds to give us his method of voice training, which we should advise every one interested in this important subject to study for themselves.”—*Public Opinion*.

“Teachers of singing may derive much scientific information from this pamphlet.”—*The Graphic*.

“An elaborate and exhaustive treatise on the human voice and the opinions of the author as to the best way to cultivate and maintain it. . . . Mr. Lunn is evidently, though a determined reformer, no fanatic, and no mere advertising adventurer. He thoroughly believes in the truth of all he writes, and decidedly has his subject at his fingers' ends. Neither is the work a mere copy of former productions ; but, on the contrary, it shows an originality of thought and a novelty of ideas which entitle it, at least, to thoughtful consideration. To all who are interested in the subject the ‘Philosophy of the Voice’ may be confidently recommended, and, whether the various deductions are found true or not, the shilling *brochure* is eminently readable, and decidedly interesting. It is idle to attempt to suppress a novel theory because it is new, or to treat it with contempt because it is by existing authorities held to be unsound. When a man argues by sheer force of logic and authority he makes out a *prima facie* case, and is entitled to be heard.”—*Figaro*.

“Mr. Lunn, who is well known as an able writer on musical subjects, holds that voice culture belongs rather to the surgical than the musical art, and his views on this subject are here set forth with great clearness and ability.”—*The Rock*.

“For those who are competent to follow the reasoning of this really profound little book there will be enjoyment as well as improvement, and certainly the learning of new things. Mr. Lunn has treated his subject, not superficially, but with evident study ; and we commend it to all who wish to ‘sing philosophically’—a luxury which is denied to the many.”—*The Tablet*.

“Mr. Lunn has brought to his work a vast fund of carefully discriminating knowledge, a practical acquaintance with all the branches of his subject, and a method of reasoning at once lucid and forcible, and for the greater part unanswerable. We gladly commend the work to all who value the proper development of their voices.”—*The Catholic Times*.

“The author explains the differences that are found between the statements of musicians and physiologists, and argues that voice-culture to be in its true position should be regarded as a branch of surgical rather than as a branch of musical art.”—*Oxford University Herald*.

“The subject is one of great interest to future orators and clergymen, especially the latter, who, by the continuous strain on the vocal organs, wrongly effected, are subject to a disease commonly spoken of as a ‘clergyman’s throat.’ To singers also the book recommends itself very strongly, and it should be in the hands of those to whom is committed the task of training the voices of our future clergymen, public orators, and public or private vocalists.”—*The Oxford Times*.

“Mr. Lunn thoroughly understands the subject upon which he writes.”—*Oxford Chronicle*.

“The work is admirably written, and well worthy of attention.”—*Cambridge Express*.

“This remarkable little book reproduces in a handy form some papers which the author originally contributed—not to a musical publication, but to the *Medical Press and Circular*. This, however, was a medium appropriate enough. Mr. Lunn’s view was to explain the differences between the statements of musicians and physiologists, and his aim ‘to place voice-culture in its true position as a branch of surgical rather than as a branch of musical art.’ The first object he has attained admirably in the work before us, the perusal of which will well repay the medical man, the rising orator, or the intelligent vocalist; the second has yet to be achieved.”—*Birmingham Daily Gazette*.

"A book that has the merit of being both original and interesting."—*Birmingham Morning News*.

"Mr. Lunn has evidently deeply studied the subject, and we strongly recommend his little book to all who are preparing for the pulpit, the senate, the bar, the stage, or the concert-room."—*Jackson's Oxford Journal*.

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"This is a remarkable essay on a popular subject. It is remarkable in many respects, but chiefly because, enthusiast as Mr. Charles Lunn the author is, he never allows his enthusiasm to mar or interfere with his logic."—*Malvern Advertiser*.

"This work, though a small one, is a masterpiece, and could be written only by one who had studied the subject in all its aspects."—*Malvern News*.

"Mr. Lunn has published an able, exhaustive, critical treatise on an important and interesting subject. Proper voice production

is, in these pages, well considered from a physiological as well as an artistic point of view ; the theories of writers and so-called 'authorities' upon the subject of the voice are critically considered, and a large amount of curious and valuable information is given to the reader. Mr. Lunn speaks out in no uncertain voice. He states opinions openly and fearlessly, and does not hesitate boldly to denounce those with whom he disagrees, or scruple to decry the many antiquated and erroneous theories which have been set up. All interested in the voice and singing should peruse the 'Philosophy of Voice.'"—*Midland Counties Herald*.

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